Member Agencies:

*American Bureau of Shipping*
*Defence Research Establishment Atlantic*
*Maritime Administration*
*Military Sealift Command*
*Naval Sea Systems Command*
*Transport Canada*
*United States Coast Guard*

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Ship Structure Committee
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Ship
Structure
Committee

An Interagency Advisory Committee

5420/SSC
February 26, 1997

To Whom it May Concern:

The Ship Structure Committee is pleased to announce the 1997-1998 **University Research Grant and Scholarship Program**. This program provides financial aid to faculty members and students at U.S. and Canadian colleges and universities. The U.S. and Canadian marine industry ultimately benefits from this research program. Funds are provided in the form of a grant or scholarship to an individual who is teaching or studying the design and analysis of marine structures. Details of the program are contained in the enclosed prospectus. We anticipate making an award up to the amount of $20,000.

Due to budgetary constraints, the total award will be split into two payments. One payment will be made during fiscal year 1997 and one will be made during fiscal 1998. That means for planning purposes, the winner should anticipate receiving the first half by August 30, 1997, and the remaining half by January 30, 1998.

The closing date for proposals for the 1997-1998 academic year is May 1, 1997, and extension requests will not be considered under this submission schedule. Announcement of the award winner, or an extension for submissions should be expected by June 15, 1997. I urge you to acquaint your faculty and students with the details of this annual program.

Sincerely,

Thomas C. Miller
Lieutenant, U.S. Coast Guard
Executive Director,
Ship Structure Committee

# UNIVERSITY RESEARCH GRANT AND SCHOLARSHIP PROGRAM

## INTRODUCTION

The Ship Structure Committee (SSC) is an interagency organization that sponsors research as a cooperative venture among its seven members. A primary objective of the Committee is:

> To provide information that will assist the U.S. and Canadian shipbuilding industry in designing and building safer, more cost effective, and more easily produced and maintained marine structures through the advancement of technology.

One method to achieve this objective is to foster study and research in the field of structural naval architecture in the United States and Canada. The University Research Grant and Scholarship Program was established for this reason.

## PURPOSE

This program is intended to provide funds to encourage the study and teaching of marine structural design and analysis for the benefit of the U.S. and Canadian marine industry. Two alternatives for funding are envisioned:

1. A student scholarship to defray the cost of completing a thesis, including tuition, subsistence, and laboratory or computer time fees.

2. A research grant to faculty members for doctoral or postdoctoral studies in marine structures.

Proposals for scholarships or grants will be considered equally. The program's intention is to fund faculty and/or graduate students for specific research to develop marine structural designers and teachers. It is not the intention of this program to fund basic education, institutional overhead or indirect costs. Citizens and permanent residents of the United States and Canada will be given preference.

## SUBJECT MATTER

This program is essentially oriented toward structural analysis and design. Although hydromechanics, materials, and welding research are important to the SSC's objective, the focus of this program is the development of analysis and design methodologies in structures. While exploration of other areas may be necessary, such work should support the structures research. Research areas include, but are not limited to, the following:

1. Unusual loads on the hull girder such as grounding, collisions, drydocking, or ice.

2. Fatigue under seaway loading, including strain rate related effects.

3. Vibrations, methods of excitation, and the effects of hull damping.

4. Probabilistic theory related to structural design including reliability methods.

5. Fundamental mechanics with specific reference to the relationship of loads and strength after non-uniform corrosion or elastic failure.

6. Analysis and design methods using computers with special emphasis on small desktop models.

**WHO MAY SUBMIT**

1. Any graduate naval architect/ocean engineer pursuing an advanced degree in structures whose thesis supports the research in marine structures outlined above.

2. Any graduate engineer pursuing an advanced degree in naval architecture or structural engineering whose thesis supports the research in marine structures outlined above.

3. Faculty members who teach marine structural analysis and design or those who are preparing to do so may submit a proposal in support of their own doctoral or postdoctoral studies.

**PROJECT CHARACTERISTICS**

1. Technical Considerations - All proposals shall be in conformance with the stated objective of the Ship Structure Committee with particular emphasis on analysis and design. The complexity of the research must be commensurate with the degree sought or supported.

2. Cost Considerations - The total cost for accomplishing the objectives of the proposed research should be in the $15,000 to $20,000 ($US) range. Estimates in excess of $20,000 will be considered where guaranteed funding for the excess from other sources is identified.

3. Project Duration - In general, projects are to be fully completed within one year. A longer time for completion will be considered and may be accepted depending on the advanced degree requirements of the candidate.

**REQUIRED DELIVERABLES**

A. Student Scholarships

1. Semester or progress reports that attest to satisfactory academic accomplishment and a summary of completed thesis work.

2. A final technical report or thesis.

B. University Research Grants

1. Quarterly progress reports summarizing activities.

2. Final technical report.

C. At the discretion of the SSC, the recipient or investigator may be invited to present an oral report at a meeting of the SSC. Additionally, the thesis or technical report may be published by the SSC as a Ship Structure Committee Report. Therefore, the SSC retains the right to publish all work accomplished under this program. However, we do not have any limitation on the publication of the results of the research in any other manner, and in fact encourage dissemination of the research as widely as possible. The SSC encourages the author to present a paper based on this effort to a professional society.

1. Technical Reports - A formal, typed technical report including photos, graphs, calculations, methodology development, findings, and conclusions is required. Depending on the nature of the research, interim technical reports may be requested. One master reproducible report and five copies of each technical report shall be provided at the end of the project.

2. Progress Reports - Progress reports should include a summary of activities during the reporting period, levels of completion, funds used to date, problems encountered or anticipated, and reference to outside contacts and meetings with government or non-government employees.

3. Research Related Information - Depending on the nature of the project, associated research material, data collection, computer software, visual aids, etc., may also be specified as deliverables.

## PROPOSAL PREPARATION

Proposals will be accepted only in response to the annual solicitation. To facilitate proposal formulation and evaluation, the following guidelines should be observed. For each section identified, the proposer should be direct and concise regarding the proposal and anticipated results. The various sections must be titled in the same manner and appear in the same order as described below:

### I. TITLE PAGE

A. Student Scholarships

1. Name and address of candidate
2. Name and address of educational institution
3. Degree sought and career goals
4. Title of thesis
5. Type of research required
6. Name of faculty advisor
7. Date of submittal

B. University Research Grants

1. Title of proposed research
2. Area of proposed research
3. Name and address of the educational institution
4. Name(s) of principal investigator(s)
5. Name of officer authorized to contractually obligate the university (if applicable)
6. Date of submittal

## II. SUMMARY OF QUALIFICATIONS

A. Candidates for scholarships must explain how or why support for the project will benefit the U.S. and Canadian marine industry. Candidates must include a summary of the following:

1. Educational and professional background;
2. Career goals; and
3. Citizenship status.

Candidates must also include a letter from the college or university where the candidate is attending addressing the following information:

1. Verify program enrollment;
2. Acknowledge acceptance of the thesis topic; and
3. Indicate departmental support for the proposed thesis work.

B. Candidates for Research grant requests must include the following:

1. Resumes of experience and educational qualifications of the principal investigator(s) and associated professional or technical staff;
2. Teaching responsibilities;
3. Experience summaries for students or clerical staff are not required unless they specifically relate to the project; and
4. An explanation of the degree program that participants are pursuing and their progress in the program.

The proposed research activities must complement the normal program of the educational institution and must be performed primarily by the teaching faculty or their students. Faculty members without teaching responsibilities are not eligible for the research grant.

## III. SUMMARY OF PROPOSED RESEARCH

Proposals are reviewed by an evaluation team with varying backgrounds in naval architecture and structural engineering. Reviewers may not be familiar with the specific problem addressed in a proposal or with the academic disciplines involved in the research. It is particularly important that this section be carefully considered. The information requested must be complete, concise, and as free of specialized technical jargon and equations as practicable. The following must be included:

A. A statement of the problem to be studied and research objectives.

B. Background information to indicate the general state-of-the-art and other research activities which directly relate to the proposed research. This statement must demonstrate to the reviewer the proposer's knowledge of the field as well as provide the reviewer with information to better understand the proposal.

C. A statement to show why the problem is important and how the solution will benefit the marine industry.

D. A summary statement of research being proposed, the expected outcome, and how it fits into the background already presented. Describe how the research fits into the overall picture of future research and applications.

E. A statement of the long-term benefits to the marine industry resulting from this work. Benefits may be direct (e.g., the project makes a significant contribution to technology) or indirect (e.g., the student will work in the U.S. or Canadian marine industry or teach at a U.S. or Canadian college or university).

## IV. MANAGEMENT PLAN

This section should show, by name and background if possible, all faculty, students, and others who will work on the project. Anyone with unique qualifications or national recognition should be mentioned. The relationship among personnel and their supervision of work or task management should be described. The proposal should define required resources and include an anticipated time schedule showing major milestones and work-hours to be spent per task. Unique factors such as relationships with laboratories, availability of faculty or students, extraordinary time requirements, etc. should be explained in this section. For scholarship requests, this section should address the relationship of the candidate to the faculty advisor and how the research will be monitored and evaluated.

## V. FACILITIES REQUIRED

The use of specific facilities will depend on the type of research to be done. A statement describing these facilities, availability, and importance to the project should be included in this section. Cost sharing of facilities by the educational institution is encouraged.

## VI. STATEMENT OF WORK

Include a comprehensive statement of work for the project. Effort should be made to separate the research into tasks which fit together in a logical sequence. Inputs and outputs for each task should be identified as well as short descriptions of task goals

## VII. PROPOSAL BUDGET

A cost breakdown by task and personnel must be included. The cost of computer time, laboratory fees and materials, or travel must be shown as separate line items within the budget. Total funding by the SSC will not exceed $20,000.

## VIII. PROPOSAL EVALUATION PROCESS

Members of the SSC will evaluate all proposals. Although details of the process may vary depending on the number and type of proposals submitted, this evaluation will consist of three stages:

A. **Initial screening to identify any disqualifying factors**. These factors include but are not limited to the following:

(1) An unqualified proposer;
(2) No specific student or researcher called out;
(3) Research outside the scope of the program;
(4) Significant omissions from the proposal;
(5) Serious technical oversights; and/or
(6) Excessive costs; etc.

B. **A detailed technical evaluation by the members of the evaluation board**. The detailed technical evaluation will include the following:

(1) Numerical rating based on selected criteria to be conducted in a manner as to avoid influence by other proposals and level of effort; and
(2) Proposals will be ranked by technical merit.

C. **Combine the technical evaluation results with other non-technical considerations to develop a balanced list of proposals in rank order**. The non-technical considerations will include the following:

1. **An evaluation of whether the effort will encourage further study and teaching of structural analysis and design**.

(a) Is the problem area important to the analysis and design of marine structures?
(b) Could improved marine structural designs result from good solutions or significant improvements in the problem area?
(c) Is there evidence that the proposed work will benefit the U.S. marine industry?
(d) Are the benefits quantitatively or qualitatively described?

2. **An evaluation of creativity**.

(a) How will the effort advance the state-of-the-art?
(b) Will the research significantly contribute to the knowledge base?
(c) Will the research foster a major innovation?
(d) Is the proposed project original?
(e) Does the research stimulate technology exploration?

3. **An evaluation of the financial statement**.

   (a) Are the total funds requested reasonable for the amount of time and effort proposed?
   (b) Will SSC funds be used by the educational institution to pay for overhead or other indirect costs?
   (c) Will the institution provide funds for this research?

4. **An evaluation of project management**.

   (a) Does it appear that appropriate guidance and control will be exercised by the faculty over the individual performing the work?
   (b) Is there a faculty member with expertise in the proposed area of study?

5. **An evaluation of the recipient's qualifications**.

   (a) Does the prospective recipient have the proper background to undertake the effort?
   (b) What are the career aspirations of the prospective recipient and how will he/she benefit the Canadian or U.S. marine industry?

## IX. CONTRACT NEGOTIATION

Once an individual or institution has been selected to receive the scholarship or research grant, the Program Manager for the SSC will negotiate the final terms and conditions. Each contract will contain standard provisions which include guidelines concerning project termination, return of unused funds, patent and data rights, etc. Any technical or administrative questions concerning the University Research Grant and Scholarship Program or the proposed research should be addressed to:

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